HEADQUARTERS
AIR FORCE BALLISTIC MISSILE DIVISION (ARDC)
UNITED STATES AIR FORCE
Air Force Unit Post Office, Los Angeles 45, California

REPLY TO
ATTN OF: WDZYO/Colonel McKean/2751

SUBJECT: Meteorological Requirements for SAMOS Satellite System

TO: ARDC (RDRTT-2)

1. The SAMOS satellite system is being developed to provide a space reconnaissance and data processing system which will permit the collection, processing and dissemination of visual and electronic reconnaissance data of the entire world surface mass on a recurring basis. An analysis of the SAMOS satellite system mission and concept reveals that in both the R&D testing phase and in the operational employment phase, orbital requirements exist for global cloud cover information. The requirements described here are exclusive of those for meteorological support during the design stages, the launch phase, the recovery efforts or support to tracking and readout stations.

2. The effectiveness of the SAMOS Visual Reconnaissance System (subsystem E) is directly proportional to the proper interpretation of available knowledge on the atmospheric obscuring phenomena through which the satellite cameras cannot observe. These phenomena are primarily cloud coverages but target objectives could be obscured by smoke, haze, snow cover, etc. The reconnaissance equipment for the visual reconnaissance readout portion of the SAMOS program consists of the satellite-borne equipment required to collect information in the visible spectrum, to process and store this information, and on a command signal from the ground to convert stored images to appropriate signals for transmission to the ground.

3. Beginning with the first SAMOS development flight test of the E-1 visual reconnaissance system scheduled in September, 1960, information will be required on the atmospheric obscuring phenomena over the United States and parts of Europe for interpreting post-operation engineering aspects and for planning concepts of future operations. These data will be required at the Satellite Test Center, 6594th Test Wing (Satellite), Sunnyvale, California. The STC will exercise over-all control of the R&D SAMOS flight test operations. It will be the hub of the command and communications network and will be responsible for launch commands, satellite adjustment commands, mission control and quality control. Later development flight tests of the E-2 and E-5 camera systems will also require cloud cover and atmospheric obscuring data on a current and forecast basis on each orbit path to maximize the photographic

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coverage over the areas of the [illegible] photographed during these orbital tests.

4. At the time of the first operational launch of the E subsystem vehicles presently planned for December, 1962, the routine capability will be required at Offutt AFB, Nebraska, to support the Satellite Operations Center/Data Processing Facility. System control for the operational program will emanate from this facility. Functions within this facility include operations scheduling and analysis, launch control monitoring and satellite vehicle mission control. The projected operationally ready date of the SAMOS system is mid-1963. There will be a continuing requirement at that time to provide global cloud cover and atmospheric obscuring forecast and observational data to support the operational system routinely at the SOC. The data readout capability will be limited to approximately 84 minutes per day. In order to select judiciously the correct times to command photographs and readouts and to optimize the systems effectiveness, accurate information on cloud cover will be essential.

5. Weapon System Evaluation Group Report No. 39, "Military Application of Artificial Earth Satellites," Vol. I, Hq USAF, 22 June 1959, provides a clear insight into the SAMOS need for global cloud information. Supplement No. 1 to this report, "Time Required for a Photo Reconnaissance Satellite to Obtain a Clear Look at the Soviet Union", 19 Aug 1959, deduces that proper application of cloud cover information versus random photographic sampling can significantly improve system effectiveness. The Lockheed Missile and Space Division has submitted a specific requirement to AFBMD in their SECRET letter by the Satellite Systems Manager, LMSD 353609, 5 February 1960, "Special Weather Support Requirements for Flights 1, 2 and 3 of the SAMOS Flight Test Program." AFBMD herewith validates this requirement for global cloud cover histories during SAMOS orbital operations. The details of providing the required support should be developed at the working level through the Staff Meteorologist, 6594th Test Wing (Satellite), with the AWS elements in direct contact with the key personnel at the STC and the SOC.

6. Request the requirement stated above be forwarded to Headquarters Air Weather Service. AWS must evaluate their capability to support the SAMOS orbital operations. The DOD priority designation associated with this requirement which should be cited to Headquarters Air Weather Service for their guidance and action is DX Brick-Bat .01. USAF precedence I-1 applies. An AWS Headquarters Task Team was given a preliminary briefing on this requirement at AFBMD during 22-24 March. The Task Team indicated that the requirement could be within their technical capabilities in the time period stated. It is imperative that the requirement be forwarded for their immediate action, however, in order to allow sufficient time for the development of reliable global cloud climatologies on which to base computer

programming activities at the Global Weather Central. Additionally, the Global Weather Central and the AWS Automatic Data [illegible] Facility are already located at Offutt AFB. The effort required to provide the required meteorological support to SAMOS in both R&D and operational phases is unique as well as a sizeable drain on the AWS resources. Any AWS activities generated as a result of this requirement aimed at developing this global forecast capability should be accorded the same precedence as the SAMOS system.

Harold L. McKean

HAROLD L. McKEAN
Colonel, USAF
Director of Operational Employment

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